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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/378,108	08/20/1999	OLAF DICKER	99P7740US	8733

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SIEMENS CORPORATION
INTELLECTUAL PROPERTY DEPARTMENT
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EXAMINER	
FERRIS, DERRICK W	
ART UNIT	**PAPER NUMBER**
2663	

DATE MAILED: 11/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/378,108	DICKER ET AL.	
	Examiner	Art Unit	
	Derrick W. Ferris	2663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 July 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 August 1999* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 7/21/2004 has been entered.

Response to Amendment

2. **Claims 1-21** as amended are still in consideration for this application. Applicant has amended claims 1, 7, 15, and 21.

3. Examiner does **not withdraw** the obviousness rejection to *Deutsch* in view of *Kashorda* and *Gendel* in view of *Kashorda* for Office action filed 01/03/04.

At issue is what is meant by the term "determine based on one or more measured parameters" as recited in the independent claims with respect to a "spectral separation". The following limitation is recited below as follows:

> "*determine based on the one or measured parameters a spectral separation from the first channel*".

In particular, at issue is applicant's step 58 (see figure 5) supported with little description at e.g., page 10, lines 6-19. In particular, the section teaches that data station 12 then determines from the parameters a spectral spacing or separation to be used for at least the next channel 12b. Such a spectral spacing ensures that additional channels 12b-d, if necessary, will be spectrally isolated form channel 12a.

In the case of *Deutsch,* the switching hop sequence may be changed from B1, B2, B3, ... B50 to B1, B2, *C3*, ... B50 where C3 is spectrally isolated from B3. See e.g., column 6, lines 1-13 of *Deutsch*. In particular, applicant argues that Bn and Cn are statically defined at the time of manufacture, see e.g., column 6, lines 13-23 of *Deutsch*. Thus a spectral spacing is not "determined". Examiner respectfully disagrees. Although the values are static (i.e., B3 and C3), the spacing between the values is not and is determined at run-time based on interference (e.g., if C3 further causes interference then D3 is selected). Hence a value chosen for C3 is spectrally isolated from B3. In other words, since another value from Bn is not chosen, the next channel is spectrally spaced. Similarly, *Gendel* discloses hoping through a series of pre-selected hopping frequencies where if interference occurs on a particular pre-selected used segment, then a new frequency is selected on a new pre-selected unused segment which is spectrally isolated from the first used segment. Thus a spectral separation is determined since a new unused segment is selected. Furthermore, no additional channels would use the determined bad used segment (i.e., subset) since there are too many errors for that segment. See e.g., columns 7-8. In other words, both references disclose selecting a frequency from another subset where the selection of the subset is arbitrary but based on or necessitated by interference (i.e., based on one or more measured parameters) such that the new frequency determined is spectrally seperated such that spectral separation is also determined. Thus although the variables are static, the actually determination process using the variables is dynamic such that the variable selected are spectrally seperated meeting the limitation. It is also important to note that applicant does not give any further clarification on *how* the determination is made in applicant's specification at page 10, lines 7-19.

Again, examiner would like to further point of that it is not clear from the claims that "F1" and "F2" are in separate *subsets* for the *same* frame (see applicant's figure 4) with respect to applicant's step of selecting a unique channel frequency for at least one other channel that has spectral separation, see applicant's specification at page 8, lines 11-19. This concept is not taught by the references cited in the rejections and is not recited in the claims.

The examiner has made this rejection non-final even thought the same rejections apply in order to give applicant the opportunity to respond to the examiner's arguments.

Claim Objections

4. **Claim 7** is objected to because of the following informalities: please add the term "separation" that was deleted at the end of step (e) with respect to spectral. Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. **Claims 1-21** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,848,095 to *Deutsch et al* ("*Deutsch*") and "A Spectrum Efficient Technique for Cordless Telephone Access to ISDN" by *Kashorda et al.* ("*Kashorda*")

As to **claims 1, 7, 15 and 21**, *Deutsch* discloses an adaptive frequency hopping method for using pre-established frequency assignments in a plurality of time slot groups which are separated by a minimum distance (i.e., "spectral separation" using a reasonable

but broad interpretation). Taught is a communication between a remote unit 14 and a base unit 12 in a wireless telephone system such as a cordless phone system [column 5, lines 59-63] (see claim 1 with further emphasis for a cordless system with respect to a wireless telephone system). Shown in figure 4, each frequency of a frequency set corresponds to a channel (i.e., a spectrum is broken up into 200 different sets of frequency/channel pairs). Using the adaptive frequency plan described at column 6, lines 54-64, each of the 200 channels are further divided into 10 subbands (step 1) where a random sequence of the subbands is created for each group (i.e., a group such as Group A shown in figure 3). Hence shown in figure 6 are 5 random sequences of the 10 subbands for a total of 50 frequency hops (steps 2-3) using 50 channels (these channels are not channel/links as recited by applicant). Next, for each sequencing, a channel is randomly selected for each subband/sequence (step 6). The key is that for each group (i.e., the four groups: Group A – Group D), the random sequence is advanced one place in a random sequence (step 4), which is key since this ensure a "spectral separation" between groups [column 2, lines 54-63].

Examiner notes that the reference is silent or deficient to a "plurality of individual communications channels between a first data station and a second data station" (e.g., channels/links 12(a)-12(d) as disclosed in relation to applicant's specification). Examiner notes the reference teaches that a remote unit 14 communicates with base station 12 through RF transceiver 210 which receives signals from and transmits signals to base station 12 through antenna 22 (i.e., it is not clear whether these radio signals are in parallel using multiple lines/channels, or serial using a single line/channels) [column 4,

lines 23-26]. Examiner notes that it would have been obvious to a skilled artisan prior to applicant's invention to use more than one channel between a radio base station and a remote station for transferring data, the motivation being that a higher bandwidth capacity can be formed by using more than one data channel at a time. This is further emphasized in the background of *Kashorda* (and not the main body of the article which discloses multiplexing both voice and data over a single channel), disclosing that in particular the cordless telephone user may only have on demand access to a variable capacity data channel (i.e., multiple logical channels), where the capacity is dynamically allocated in accordance with user demands [page 15]. Thus in choosing another unique carrier frequency for more than one channel using the teachings of *Deutsch*, examiner notes that for each particular time slot that the next channel must be on a different group then the previous channel such that the two channels are "spectrally seperated". For example, in using figure 3 as a guideline, for a first time slot 1, if a first link is using A1 then a second channel/link must choose from B1, C1, or D1 in that time slot. Examiner furthermore notes that if interference occurs on A1 for a first channel/link where the first channel/link is forced to used B1 (as an example) the second link must a different channel which cannot already be assigned (see step 6 column 6, line 65).

As both references disclose wireless communications between a base station and a remote unit, and more specifically, cordless communications, examiner notes a motivation to combine the subject matter as a whole for both references.

As to **claims 2 and 19**, both references disclose operating in duplex. *Deutsch* discloses time division duplexing (TDD) [column 4, line 62].

As to **clams 13 and 16,** *Deutsch* discloses using a frequency offset (i.e., minimum distance of 2 MHz). Using a reasonable but broad interpretation of the claim language, the minimum distance is optimal spectral spacing [column 2, lines 54-64; column 6, lines 26-36].

As to **claims 5 and 12,** *Deutsch* discloses a frequency hopping scheme.

As to **claims 3,4, and 6,** *Deutsch* discloses a method to "model interference encountered over individual channels between the data stations" using a reasonable but broad interpretation of "model" (i.e., examiner notes an "adaptive" method given applicant's written disclosure on page 8, line 23). In particular, *Deutsch* discloses modeling interference through monitoring a link using the RSSI (i.e., an error rate) as well as "signals indicating channel quality" [column 5, lines 45-51]. Thus *Deutsch* teaches a step to "model interference". Examiner also notes a broad but reasonable interpretation of "select parameters" that minimize the loss of information. In particular, examiner notes that the frequency hopping scheme proposed by *Deutsch* minimizes the loss of information. Examiner notes that it would have been obvious to one skilled in the art to adjust the parameters in the algorithm (i.e., select parameters) where these parameters minimize the loss of information over each of the individual channels. For example, such parameters to modify are disclosed by *Deutsch* at column 6, lines 40-41. Motivation for adjusting the parameters is disclosed at column 7, lines 1-2. Thus *Deutsch* also discloses "select parameters" that minimize the loss of information over each of the individual channels. Examiner would like to furthermore point out that applicant does

not claim particular ways of modeling interference of selecting parameters thus leaving room for a very broad but reasonable interpretation for the recited claimed subject matter.

As to **claims 9, 10, 17 and 18**, see the rejection for claim 6.

As to **claim 8**, the throughput of the combine channels/links is equal to the maximum throughput using a reasonable but broad interpretation of the claim.

As to **claims 11 and 20**, *Deutsch* discloses determining parameters at predetermined intervals of time using a reasonable but broad interpretation.

As to **claim 14**, *Deutsch* also discloses using a table for selecting frequencies from a subband [column 5, lines 41-44].

1. **Claims 1-21** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,115,407 to *Gendel et al* ("*Gendel*") and "A Spectrum Efficient Technique for Cordless Telephone Access to ISDN" by *Kashorda et al.* ("*Kashorda*")

As to **claims 1, 7, 15 and 21**, *Gendel* discloses a frequency hopping communication apparatus for modifying frequency hopping sequence in accordance with counted errors. In particular, figure 1 shows a first data station as 102 and a second data station as 104 or 106 respectfully. With respect to the limitation:

"*determine based on interference of the first channel during transmission a spectral separation between the first channel and at least one other channel, and select a unique channel frequency for the at least other channel based on the first channel and the determined spectral separation of the at least one other channel*".

See figures 2a and 2b. The above limitation is met since if one frequency is bad (e.g., f15 for segment 2 shown in figure 2a of *Gendel*) then all the frequencies (e.g., f14-f20) for that segment are not chosen (e.g., see column 7, lines 30-33). Thus with respect to the

limitation, a unique channel frequency for the at least remainder one other channel based on the first channel and the determined spectral separation of the at least one other channel is taught since all frequencies for the first segment due to interference are replaced by frequencies in a different segment/band (i.e., an unused segment/band). Thus it does not matter if a first and second channel frequency are in the same segment since the limitation is still met using a reasonable but broad interpretation of spectral separation.

Examiner notes that the reference is silent or deficient to a "plurality of individual communications channels between a first data station and a second data station" (e.g., channels/links 12(a)-12(d) as disclosed in relation to applicant's specification). In particular, *Gendel* shows one general communication link (i.e., data and control link 110) between the two stations as shown in figure 1 (e.g., see column 7, lines 3-4). Examiner notes that it would have been obvious to a skilled artisan prior to applicant's invention to use more than one channel between a radio base station and a remote station for transferring data, the motivation being that a higher bandwidth capacity can be formed by using more than one data channel at a time. This is further emphasized in the background of *Kashorda* (and not the main body of the article which discloses multiplexing both voice and data over a single channel), disclosing that in particular the cordless telephone user may only have on demand access to a variable capacity data channel (i.e., multiple logical channels), where the capacity is dynamically allocated in accordance with user demands [page 15].

As to **claims 2 and 19**, both references disclose operating in duplex e.g., *Gendel* discloses duplexing [column 8, line 25].

As to **clams 13 and 16**, *Gendel* discloses separating the frequencies optimally as shown in figure 2a and column 7, lines 27-52.

As to **claims 5 and 12**, see *Gendel* column 8, lines 7-12.

As to **claims 3,4, and 6,** *Gendel* discloses a method to "model interference encountered over individual channels between the data stations" using a reasonable but broad interpretation of "model", e.g., see column 4, lines 26-45 and column 10, line 53 – column 11, lines 24.

As to **claims 9, 10, 17 and 18**, see the rejection for claim 6.

As to **claim 8**, the throughput of the combine channels/links is equal to the maximum throughput using a reasonable but broad interpretation of the claim.

As to **claims 11 and 20**, *Gendel* discloses determining parameters at predetermined intervals of time using a reasonable but broad interpretation since the error rate is determined at predetermined time intervals (e.g., see column 7, lines 11-13).

As to **claim 14**, *Gendel* also discloses using a table for selecting frequencies from a subband [column 12, lines 29-30].

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Derrick W. Ferris whose telephone number is (703) 305-4225. The examiner can normally be reached on M-F 9 A.M. - 4:30 P.M. E.S.T.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau Nguyen can be reached on (703) 308-5340. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Derrick W. Ferris
Examiner
Art Unit 2663

DWF

CHI PHAM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600 6/28/07